Poster

New methods of mass cultivation of nematodes

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Keywords: Use Industrial; C. elegans; Feeding

ABSTRACT

Motivation: Caenorhabditis elegans is a model organism used in biomedical research whose genome is completely sequenced, moreover, the physiology and development is well known [1]. C. elegans are usually fed with a bacterial-based medium [2]. Thanks to its rapid development by self-fertilization and its ability to be cultivated in both solid and liquid medium, C. elegans can be growth using liquid fermenters. We want to explore new methods of massive production to use this nematode in different industrial processes.

Methods: In the laboratory, C. elegans is fed with E. coli OP50 on plate and with E. coli X1666 in liquid culture [2]. We have optimized the culture of nematodes with the bacterial strain PV333 in NGM plates. Then, they were transferred to liquid culture with S-Medium with 3% PV333. Finally, for the nematodes to be used in certain processes where high saline concentrations are required, we used an adapted strain to salt in liquid cultures with several NaCl concentrations (5 gr/L, 20 gr/L and 35gr/L).

Results: Nematodes fed on PV333 showed a faster development compared to the E. coli control strain in both plate and liquid. The adaptation to salt of the nematodes was satisfactory up to the concentration of 20 gr/L and it is expected to achieve a good growth of the population at the concentration 35 gr/L NaCl. We expect to have a better nematode production yield using PV333 in liquid fermenters than using regular E. coli.

Conclusions: Strain PV333 is a good substrate to produce nematodes massively and fast. In addition, the used of high concentration of salt will allow C. elegans to survive adverse conditions and to be used in diverse industrial procedures.

REFERENCES

[1] Cox-Paulson, E.A., Grana, T.M., Harris, M.A. and Batzli, J.M. (2012). Studying Human Disease Genes in Caenorhabditis Elegans: A Molecular Genetics Laboratory Project. CBE Life Sciences Education, Summer, vol. 11, no. 2, pp. 165-179 ISSN 1931-7913; 1931-7913. DOI 10.1187/cbe-11-06-0045; 10.1187/cbe-11-06-0045.

[2] Avery, L., and You, Y.J. (2012). C. elegans feeding. In WormBook, The C. elegans Research Community, ed. https://doi.org/10.1895/wormbook.1.150.1, http://www.wormbook.org.